UNITED STATES SIGNAL SERVICE

MONTHLY WEATHER REVIEW.

VOL. XVII. WASHINGTON CITY, FEBRUARY, 1889. No. 2.

INTRODUCTION.

This REVIEW treats generally the meteorological conditions of the United States and Canada for February, 1889, and is based upon reports of regular and voluntary observers of both countries.

On chart i the paths of the centres of nine areas of low pressure are shown; the average number traced for February during the last fourteen years being 10.7. This chart also exhibits the approximate paths of the centres of seven depressions traced over the north Atlantic Ocean; the limits of fog-belts west of the fortieth meridian, and the distribution of field ice during the month. The areas of high and low pressure and north Atlantic storms are discussed under their respective headings.

Chart ii exhibits the distribution of mean atmospheric pressure and temperature for the month. The mean temperature was above the normal from the upper Missouri valley westward to the Pacific coast, and thence southward over California; it was also slightly above the normal in eastern Nova Scotia. The greatest excesses occurred in, and north of, Dakota, northern Montana, and in northwestern Washington, where the means were 5°, or more, above the normal. In all other districts the month was cooler than the average February, the most notable deficiencies occurring east of the Mississippi River, and from the southern part of the Lake region to the Gulf of Mexico, where they exceeded 5°.

The distribution of precipitation for February, 1889, is shown on chart iii, and the normal precipitation for eighteen years is exhibited on chart iv.

The precipitation was deficient in the plateau and Pacific coast regions, and in all districts east of the Mississippi River, except in the upper lake region and the south Atlantic states, where there was a slight excess. On the eastern Rocky Mountain slope, in the extreme northwest, and the Missouri and Rio Grande valleys the precipitation was in excess of the average for the month. The current and normal precipitation in the several districts is treated in detail under the heading "Precipitation." In the table of excessive precipitation a record of excessive monthly, daily, and hourly rainfalls for February, 1889, will be found. In this issue of the REVIEW there also appears a summary, by stations, of excessive monthly, daily, and hourly rainfalls at regular stations of the Signal Service during the periods of observation.

Chart v exhibits the depth of snow on the ground at the close of the month, and its discussion appears under the heading of "Precipitation." This chart also shows the limits of freezing weather during February, 1889.

Commencing with July, 1888, the meteorological means for the regular stations of the Signal Service have been determined from observations taken twice daily at 8 a. m. and 8 p. m. (75th meridian time). These hours of observation have been permanently adopted to supersede the former system of tri-daily observations taken at eight-hour intervals. The monthly mean temperature for Signal Service stations represents the mean of the maximum and minimum temperatures.

In the preparation of this REVIEW the following data, received up to March 20, 1889, have been used: the regular semi-daily weather-charts, containing data of simultaneous observations taken at 133 Signal Service stations and 24 Canadian stations, as telegraphed to this office; 171 monthly journals and 175 monthly means from the former and 24 monthly means from the latter; 557 monthly registers from voluntary observers; 109 monthly registers from United States Army post surgeons; marine records; international simultaneous observations; marine reports through the co-operation of the Hydrographic Office, United States Navy, and the "New York Herald Weather Service;" monthly weather reports from the local weather services of Alabama, Arkansas, Colorado, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New England, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, and Texas, and the Central Pacific Railway Company; trustworthy newspaper extracts, and special reports.

ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean atmospheric pressure for February, 1889, as determined from observations taken daily at 8 a. m. and 8 p. m. (75th meridian time), is shown on chart ii by isobars. On July 1, 1888, the tri-daily observations of the Signal Service were superseded by observations taken twice daily at the hours named. A protracted series of hourly observations has shown that the difference is almost inappreciable between the mean pressure obtained from two observations taken at these hours and that determined from tri-daily observations taken at eight-hour intervals.

The mean pressure for February, 1889, was highest at stations in the middle and northern plateau regions of the Rocky Mountains, where it rose above 30.25. Within an area extending from the south Atlantic and east Gulf states northwestward to the upper valley of the Columbia River the mean values were above 30.20. The mean pressure was lowest over the northern portion of New Brunswick, where it fell to 29.99 at Father Point. Over the western portion of the country the mean readings were above 30.10, except in southern California and portions of southern Arizona and New Mexico.

As compared with the pressure chart for January, 1889, a general increase in pressure is shown, except over the middle Rocky Mountain regions and in south-central New Mexico, where there has been a slight decrease. The most marked increase has occurred from the Mississippi and lower Missouri valleys eastward to New England and the Atlantic coast states, where the mean readings in February were from .10 to .14 higher than in the preceding month. Along the Pacific coast

the increase varied from .10 at the mouth of the Columbia River to .01 in the upper valley of the San Joaquin River. No material changes occurred in the positions of the areas of highest and lowest mean pressure.

As compared with the normal pressure for February the mean pressure was above the normal, except in southern and southwestern California, southern New Mexico, and in the Saint Lawrence Valley, where slight deficiencies were shown, the most marked of which, .06, was noted at San Diego, Cal. At Yarmouth, N. S., and Norfolk, Va., the mean pressure was normal. The greatest departures above the normal occurred in northern Washington, where, at stations, they were more than .15. Over the central portions of the country east of the Rocky Mountains the February, 1889, means averaged about .05 above the normal.

BAROMETRIC RANGES.

The monthly barometric ranges at the several Signal Service stations are given in the table of miscellaneous meteorological data. The general rule, to which the monthly barometric ranges over the United States are found to conform, is that they increase with the latitude and decrease slightly, though somewhat irregularly, with increasing longitude. In the current month the ranges were greatest in southeastern Minnesota, where they exceeded 1.60, whence they decreased to upper Michigan, where they were less than 1.20. From the upper lake region the barometric ranges increased eastward to New England, where they amounted to more than 1.60 in southern New Hampshire. From Minnesota westward the ranges decreased to less than .80 in the northern plateau region of the Rocky Mountains. Along the Atlantic coast the ranges varied from .36 at Key West, Fla., to 1.61 at Manchester, N. H.; between the eighty-second and ninety-second meridians, .61 at Cedar Keys, Fla., to 1.58 at La Crosse, Wis.; between the Mississippi River and the Rocky Mountains, .72 at Galveston and Brownsville, Tex., to 1.70 at Saint Paul, Minn.; in the plateau and Rocky Mountain regions, .58 at Fort Grant, Ariz., to 1.30 at Poplar River, Mont.; on the Pacific coast, .52 at San Diego, Cal., to .85 at Roseburgh, Oregon.

AREAS OF HIGH PRESSURE.

In the study of areas of high pressure which were observed during the month of February it will be observed that during the first half of the month an area of high pressure covered the northern and central plateau regions, remaining almost stationary, but at times the centre oscillated between Utah and Oregon. While the pressure at the centre varied, it continued decidedly above the normal until the development of the storm in the Rocky Mountain region on the 13th. Seven areas of high pressure were observed during the month, five of which approached the stations from British America, and these, with one exception reached the Atlantic coast. The direction of movement while near the centre of the continent was more directly south than usual, but after approaching the coast the movement changed to easterly. The four areas which left the coast north of Hatteras, N. C., apparently inclined to the north of east after reaching the coast line.

I.—This area of high pressure was a continuation of number vi described in the January REVIEW. On the 1st of the month it extended over the plateau and Pacific coast regions from British America to Mexico, the pressure at the centre being 30.64. This distribution of pressure continued until the 13th, the maximum pressure occurring on the 2d, after which the barometer oscillated (but remained high) during the transit of two areas of high pressure over the eastern slope of the Rocky Mountains, one of which was apparently formed from the cold air passing eastward over the Rocky Mountains from this area, and the other moving southward from British America, with considerable energy, apparently caused a decline of barometric pressure over the plateau regions.

II.—This area of high pressure appeared north of Manitoba on the 4th, while there was a severe storm central in the Lake region, and moved directly southward to the Missouri Valley, preceded by general snow and attended by a decided cold wave; the temperature falling to —46° north of Minnesota on the 5th, and freezing weather occurred along the east Gulf coast and in Florida on the 7th. After the centre reached the lower Missouri valley it passed southeastward over Tennessee and northern Alabama and Georgia, and disappeared off the south Atlantic coast during the 8th. While the cold wave reached the east Gulf coast and northeastern Texas, it did not extend to Galveston and southern Texas, the movement of the high area being such as to cause easterly winds in the west Gulf, thereby reducing the effect of the cold wave. This cold wave may be cited as an illustration of the statement previously made by this office, that the appearance of a cold wave in Minnesota and Dakota is not invariably followed by a cold wave on the Texas coast. In this case the temperature at Bismarck, Dak., fell from 38° on the 3d to —6° on the morning of the 5th, a fall of 44°; and the cold wave caused a fall of 20° at New Orleans, La., attended by freezing weather, while the temperature remained at about 50° at Galveston, Tex.

III.—This area formed on the eastern slope of the Rocky Mountains on the 8th, and was apparently a part of the high area previously noted as central in the plateau regions. It moved eastward over the Southern States during the 9th and 10th, inclining slightly to the north of east as it approached the Atlantic coast, while the pressure at the centre decreased slowly after the area passed the Mississippi Valley. It disappeared east of the middle Atlantic coast during the 10th, and the increase of pressure during the night of the 11th at stations in Nova Scotia indicated a northeasterly movement over the Atlantic.

IV.—Number iv was first observed on the 14th north of the upper lake region, to the west of a severe storm in the Maritime Provinces and to the northeast of an extended low area then covering the Rocky Mountain region. It passed southeastward from the Hudson Bay region over the Saint Lawrence Valley and New England, attended by a cold wave in the upper Saint Lawrence valley and no marked change in temperature along the coast. The pressure at the centre decreased during the southeasterly movement, and it disappeared to the east of Nova Scotia on the 16th.

V.—Number v appeared on the 15th far to the north of Montana and extended southward over the eastern Rocky Mountain slope during the 16th and 17th, causing on the latter date a decided fall in temperature as far south as northern Texas. The movement of the centre of greatest pressure was first apparently to the eastward, and after reaching Manitoba it changed to the southward, disappearing while central over the Indian Territory on the 18th. This area of high pressure was followed quickly by high area number vi, of which it formed a part after the 18th.

VI.—Number vi was observed north of Montana on the 19th, and was apparently a reinforcement of the area previously described. The centre of greatest pressure was transferred from the Indian Territory to north of Dakota between the 18th and 19th, after which the movement was rapid to the southeast, attended by decidedly cold weather throughout the Northwest, Lake region, and central valleys. The centre passed to the lower Ohio valley on the 20th, when this area covered the greater portion of the country east of the Rocky Mountains, after which it moved eastward to the middle Atlantic coast, attended by increasing pressure at the centre. After reaching the coast line it apparently moved to the northeastward, and it was last observed over the Atlantic southeast of Nova Scotia on the 22d.

VII.—When the preceding area covered the eastern portion of the United States number vii appeared to the north of Idaho, apparently moving southward. It extended over the eastern slope of the Rocky Mountains and central valleys during the 22d and 23d, attended by the most intense and extended cold wave of the month. In the extreme northwest the temperature fell to —52°, and the barometric pressure reached the unusual reading of 31.16. On the 23d the temperature ranged

from —10° to —20° in the upper lake region, while it was from —20° to —40° in Minnesota and Dakota. During the passage of this cold wave over the Lake region the minimum temperatures of the season occurred in the northern states east of the Mississippi and as far southward as Tennessee and North Carolina. During the twenty-four hours following the 8 a. m. report of the 23d the centre of greatest pressure passed from Manitoba to the middle Atlantic states, the barometer falling from 31.10 to 30.88 during the transit. The easterly movement continued during the 24th, the pressure increasing at Sydney from 30.22 on the night of the 23d to 30.86 on the morning of the 25th. A secondary area of high pressure (via) formed over the Lake region on the 25th, and moved northeastward over the Saint Lawrence Valley, where it continued until the morning of the 28th, but during the last twelve hours of the month the centre of greatest pressure passed southwestward to the middle Atlantic states.

The following table exhibits, in a concise manner, some of the more prominent characteristics of the high areas:

No.	First observed.			Last observed.		Duration.	Velocity per h'r.	Highest pressure.		
	Date.	Lat. N.	Long. W.	Lat. N.	Long. W.			Date.	Station.	Reading.
		°	°	°	°	Days.	Miles.			Inches.
I	1	42	115	37	112	12.0	*	2	Salt Lake City, Utah	30.76
II	4	55	97	31	78	3.5	28.0	5	Minnedosa, Manitoba	30.66
III	8	38	100	37	81	1.5	33.3	9	Fort Smith, Ark	30.42
IV	14	52	82	43	62	2.0	27.1	15	Rockliffe, Ont	30.52
V	15	53	116	36	98	3.0	26.4	16	Qu'Appelle and Swift Current, N. W. Ter.	30.52
VI	19	50	103	42	60	3.0	40.3	21	New York City	30.76
VII	20	52	117	44	59	4.5	29.7	22	Qu'Appelle, N. W. Ter.	31.16
VIIa	25	44	79	48	63	3.0	13.9	26	Bird Rocks, Gulf of St. L	30.92
Means	....	....	....	....	....	4.1	24.8	....	....	30.76

*Nearly stationary.

AREAS OF LOW PRESSURE.

During the month of February that portion of the country southward of the Lake region was comparatively free from barometric disturbances of marked intensity. Of the nine areas of low pressure traced on chart i it will be noted that six were observed in British America north of Montana and Dakota, from which region they all moved in the direction of the Great Lakes, inclining first to the south of east, and afterwards following the general course of the Saint Lawrence Valley. One area of low pressure was observed in the region of the Gulf of Mexico, and one, which developed in the central Rocky Mountain region, after being forced southward to Texas passed northeastward to the Lake region.

The following table exhibits the principal facts regarding these low areas:

No.	First observed.			Last observed.		Duration.	Velocity per h'r.	Lowest pressure.		
	Date.	Lat. N.	Long. W.	Lat. N.	Long. W.			Date.	Station.	Reading.
		°	°	°	°	Days.	Miles.			Inches.
I	29*	52	100	48	57	3.0	29.9	1	Halifax and Sydney, N. S	29.20
II	1	52	96	42	80	1.5	25.0	2	Saugeen, Ont	29.56
III	3	50	104	48	57	3.0	31.9	6	Father Point, Quebec	29.08
IV	6	52	100	47	61	3.0	33.3	9	Sydney, N. S	29.60
V	9	49	100	47	77	2.0	29.2	11	Saugeen, Ont	29.50
VI	12	53	110	47	95	1.0	37.5	12	Qu'Appelle, N. W. T.	29.50
VIa	13	40	104	52	67	4.5	25.0	13	Denver, Colo ‡	29.32
VII	17	29	97	49	64	2.0	50.0	19	Anticosti, Gulf of St. L.	29.16
VIII	20	48	109	52	62	2.0	50.0	22	Anticosti, Gulf of St. L.	29.72
IX	27	54	115	53	96	1.0	37.5	27	Swift Current, N. W. T.	29.68
Means	....	....	....	....	....	2.3	34.9	....	....	29.43

*January. ‡ Also at Sault de Ste. Marie, Mich., on the 16th.

I.—This storm was partially described in the January REVIEW. The month of February opened with the centre of disturbance in Maine, north of Portland, with a well-marked barometric gradient to the west and southwest, and westerly gales on the Atlantic coast as far south as Hatteras, N. C. The storm moved eastward to Nova Scotia during the 1st, causing severe gales in the Maritime Provinces, which continued during the 2d, the centre of disturbance passing to the northeast after reaching the Nova Scotia coast.

II.—This storm had also appeared within the limits of observation by the first telegraphic report of the month. When the preceding storm was central over Maine, this disturbance was approaching from British America and was central north of Manitoba. It passed southeastward north of the upper lake region, causing fresh to brisk westerly winds, but becoming more extended and apparently losing energy during the easterly movement. It could not be traced farther east than the lower lake region, but a secondary disturbance developed off the New England coast on the 3d and apparently moved northeastward over the Atlantic.

III.—This storm was also first observed north of Montana, where it was central on the afternoon of the 3d. It increased rapidly in energy and moved at the rate of about sixty miles per hour during the night of the 3d, the morning report of the 4th exhibiting a well-defined area of low pressure, bounded by circular isobars, central near Saint Paul, Minn., where the barometer had fallen from 29.82 to 29.18 in twelve hours. Within the west quadrants of this storm, at stations in the upper Missouri valley and at northern Rocky Mountain stations, wind velocities ranged from forty to sixty-six miles per hour, and were in many cases accompanied by light snow. During the easterly movement of this storm the snow increased, and gales continued in the Lake region and upper Mississippi valley. The centre of disturbance reached its most southerly latitude while passing over Michigan, from which point it moved northeastward to New England and thence almost directly northward to the Saint Lawrence Valley. This storm was one of marked energy throughout its entire course, the pressure at the centre falling to 29.18 in the Northwest, and then increasing to about 29.30 while passing eastward to the New England coast, after which a second fall in the barometer occurred when the minimum pressure was observed.

IV.—Number iv was observed north of Dakota on the 6th, when the preceding storm was central in the lower Saint Lawrence valley. It moved over the same general course followed by the preceding storm, moving first southward to southern Minnesota and thence eastward over the Lake region and New England, disappearing to the north of Nova Scotia on the 9th. It was a disturbance of slight energy, and, although clearly defined, the pressure at the centre remained near 29.80 during its transit, although it fell to 29.60 at Sydney, N. S., when the centre was near that station.

V.—Number v was first observed in the region north of Dakota on the 9th, and followed the same general course as that described for the two preceding storms, except that after reaching the longitude of Lake Huron its track was to the north of the Saint Lawrence River. It developed but slight energy until reaching the upper lake region, when it became well defined as a barometric disturbance attended by winds of moderate force. The pressure at the centre reached its minimum while passing over Lake Huron, after which the isobars bounding the storm became more extended, and the location of the centre could not be determined after the 11th. Reports from the Atlantic coast indicate that a storm passed northeastward off the middle Atlantic and New England coasts, following the general course of the Gulf Stream, about the time of the disappearance of this storm in the Lake region.

VI and VI*a*.—The morning reports of the 12th indicated the advance of an area of low pressure from the region north of Montana, while an area of high pressure covered the plateau and Rocky Mountain regions, extending from Washington Territory to Texas and the lower Mississippi valley. During the succeeding twenty-four hours the area of low pressure moved southeastward, covering the eastern slope of the Rocky Mountains, the centre of disturbance being in Minnesota, while a secondary depression (via) covered eastern Colorado. During the 13th the low area in Minnesota disappeared by an increase

of pressure, apparently due to the advance of an area of high pressure from the north, while from the same cause the disturbance in Colorado was forced southward to New Mexico, and apparently divided—one portion passing over Texas and developing energy which resulted in the general storm traced as vi*a*. It passed from Texas northeastward over the Lake region from the 15th to 17th, attended by general rains in all districts east of the Mississippi and by snows in the Northwest. The rains attending this storm were heavy in the Ohio Valley and middle Atlantic and Southern States, and damaging floods occurred in the rivers of South Carolina. This storm moved at the rate of about sixty miles per hour during the first twelve hours of its northeasterly movement from northern Texas to northern Illinois. Its movement was somewhat retarded while passing over the upper lake region, and its direction was deflected toward the north. After passing the upper lake region the northeasterly movement was resumed. That portion of the low area which was apparently forced westward over New Mexico and Utah remained about stationary during the 15th and 16th, and finally disappeared by a gradual increase of pressure without causing any marked disturbance.

VII.—Number vii developed in southern Texas on the 17th, when the pressure was low over the Rio Grande Valley and New Mexico and an area of high pressure covered the northern portion of the eastern Rocky Mountain slope. It passed rapidly to the northeast, moving at the rate of seventy-five miles per hour during the night of the 17th, the centre of disturbance passing from southern Mississippi to western Pennsylvania, the barometer at the centre falling from 29.68 to 29.36 during this interval. This rapid movement was apparently due to the southerly movement of the area of high pressure and attending cold wave to the westward, which caused a "norther" in the Southwest and a cold wave over the central valleys. The northeasterly movement continued during the 18th and 19th, and the depression disappeared to the northeast of New England on the latter date, but the westerly gales continued on the north Atlantic coast until the 20th.

VIII.—Number viii developed in northern Montana on the 20th and passed rapidly eastward over Dakota, Minnesota, and the upper lake region, preceded by fair weather and warm southerly winds and followed by general snows and the most decided cold wave of the month. Although the pressure at the centre of this disturbance remained near 29.90 during its passage over the continent, the barometric gradient to the westward was well marked, owing to the unusually high barometric readings within the high area to the westward. The rapid easterly movement continued after passing the Lake region, and it disappeared on the 23d to the east of Nova Scotia.

IX.—Number ix appeared far to the north of Montana on the 27th, although the pressure was low in that region during the 26th, and also on the north Pacific coast on the 25th. It passed eastward as far as Manitoba, where it was central at the close of the month, but the pressure had increased at the centre during the easterly movement.

NORTH ATLANTIC STORMS FOR FEBRUARY, 1889 (pressure in inches and millimetres; wind-force by Beaufort scale).

The paths of the depressions that appeared over the north Atlantic Ocean during February, 1889, are shown on chart i. These paths have been determined from international simultaneous observations by captains of ocean steamships and sailing vessels, received through the co-operation of the Hydrographic Office, Navy Department, and the "New York Herald Weather Service."

Seven depressions have been traced for February, 1889, of which five advanced over or near Newfoundland; one apparently developed south of Nova Scotia, and one first appeared southwest of the British Isles. The approximated paths of two depressions of great strength which appeared between the Azores and the West Indies in the latter part of January, 1889, are also shown on this chart.

Over the western portion of the ocean the weather during February, 1889, continued generally unsettled, with gales of varying force, until the 23d, after which fair weather predominated, until the close of the month. Over mid-ocean the stormy periods were the 9th, 13th to 17th, 21st and 22d, the remainder of the month being characterized by unusually fine weather and generally high barometric pressure. Over and near the British Isles the storm periods extended from the 1st to 3d, 8th to 11th, 13th to 16th, and 26th to 28th, the severest storms occurring during the first decade of the month.

As compared with the corresponding month of previous years, the storms of the north Atlantic during February, 1889, were deficient in number and energy, more particularly over mid-ocean. Barometric pressure falling below 29.00 (737) was reported on but two dates, on the 3d over the northern portion of the British Isles, and on the 12th to the southward of Nova Scotia, while in preceding years correspondingly low pressure has been more frequently noted in February.

The following extract from a report by Captain Brillonin, of the French s. s. "Ville de Bordeaux," indicates the severe character of the disturbances which attended the depression traced between the West Indies and the Azores from the 26th to the 28th, inclusive: "26th, noon, position by dead reckoning, N. 25° 27′, W. 54° 18′.; sea growing higher and higher; barometer fell to 29.69 (754); the wind, from e. by s., in violent squalls alternated with calms all the afternoon; sea always growing worse; 9.30 p. m., barometer 29.49 (749); midnight, blowing a hurricane; barometer 29.33 (745), after which it rose gradually. 27th, 4 a. m., barometer 29.41 (747); sea frightful from e. to ne. and n.; squalls of great violence from e. Wind backed to ne., nne., and n. during the 27th, and the barometer continued to rise."

The following abstract from the log of the s. s. "Hungarian," Capt. A. Langlois, commanding, shows the general character of the storms which attended the depression whose approximated path is charted southwest of the Azores on January 26th and 27th: "25th, fresh se. wind and very hard squalls of wind and rain; sea very much confused from se. and westward; noon, in N. 33°, W. 40°, wind very unsteady in force from n.; 3 p. m., hard squalls from nw.; 4 p. m., fresh gale from nw.; barometer stopped falling at 29.38 (746); midnight, hard gale and very heavy sea. 26th, 1 a. m., furious gale and terrific sea, sweeping clear over the ship; noon, in N. 31°, W. 42°, moderating a little; wind backing to westward and rather less sea."

The following are brief descriptions of the depressions traced during February, 1889:

1.—This depression was a continuation of low area i, and on the 2d was central over the east portion of the Gulf of Saint Lawrence, with pressure falling below 29.30 (744) and fresh to strong gales to the thirtieth parallel. By the 3d the storm-centre had passed to the northward of Newfoundland beyond the region of observation.

2.—This depression apparently developed northwest of Bermuda on the 3d, and thence moved northeast to the forty-first parallel by the 4th, whence it probably passed northward over Newfoundland, its course being attended throughout by gales of moderate strength.

3.—This depression was a continuation of low area iii, which caused severe gales off the middle Atlantic and New England coasts during the 6th and 7th, and by the morning of the 7th had advanced over the Gulf of Saint Lawrence. Moving north of east the depression was central north of the Banks of Newfoundland on the 8th, and thence moved north of east to the thirty-fourth meridian by the 9th, and at noon, Greenwich time, of the 10th, had apparently advanced to the north of